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of Sicily. The species was described by Ruppel from the Red sea, but has been taken at Palermo and on the Algerian coast. It attains the length of six feet.——The Marchese A. De Gregorio (*Il Nat. Sic.*, March), continues his notes on the Jurassic corals of Sicily, and describes four new species.——Miss Rosa Smith (Bull. Col. Acad. Sci., 1884), describes *Squalius lemmoni*, discovered by Mr. J. G. Lemmon in Rillito creek, near Tucson, Arizona.——Professor Greeff (Sitz. Ges. Natur. Marburg) describes *Gobius bustamentei* from St. Thomas.

Reptiles.—Dr. Strahl (Sitz. Ges. Bef. Natur. Marburg, 1882–83) describes the development of *Lacerta agilis, vivipara* and *viridis*, especially of the latter. The allantoïs, the changes in the ovum and the formation of the vascular system in the germinal disk, are given at length.

Mammals.—Professor Lieberkuhn (Sitz. Ges. Natur. Marburg, 1882), gives the results of his researches into the development of the ovum and embryo of the porpoise; and in the same proceedings, 1883, discusses the formation of the medullary canal in mammals generally.

PHYSIOLOGY.[1]

COLORING MATTERS OF BILE.—C. A. MacMunn is led by his observations to dispute a generally accepted view that the liver of invertebrates is nothing more than a pancreas in function; the most striking outcome would seem to be the discovery of the wide distribution of a coloring matter, which is beyond doubt a chlorophyll pigment; this it is proposed to call entero-chlorophyll. The author has chiefly relied on the evidence afforded by the spectroscope, for, as he points out, it is useless to expect that the chlorophyll in the state in which it occurs should be capable of developing oxygen in the presence of sunlight in the livers of Mollusca, or in the pyloric cæca of star-fishes, &c. The new body would appear to differ from plant-chlorophyll in that treatment with nitric acid makes the solution slightly greenish, although previously it may have been yellow. This is explained by the view that the pigment is in a more or less reduced condition, "probably due to the action of a ferment on the chlorophyll, or to the fact that it is sometimes present in the form of a radical or chromogen."

Spectroscopic measurements show that the liver of the oyster contains a coloring matter which, when treated in alcholic solution with nitric acid, gives the same spectrum as a similar solution of leaf-green when treated with that reagent. A large number of other Mollusca have been examined.

Among the Arthropoda, Crustaceans have alone been studied; in the common crab enterochlorophyll was rarely, but lutein constantly found; in the crayfish there was abundance of hæmatin in the bile.

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[1] This department is edited by Professor HENRY SEWALL, of Ann Arbor, Michigan.

The pyloric cæca of star-fishes were found to function as a so-called liver; that is to say, they not only seem to prepare a digestive ferment, but they serve as organs for the storing and probably for the actual production of pigments for surface coloration; enterochlorophyll is here also found.

Hæmochromogen, which is found in the bile of the crayfish and of the Pulmonate Mollusca, is apparently due to an animal's mode of life, and does not seem to be "distributed according to morphological considerations."

It is as yet too early to speak definitely, but there is much evidence to show that enterochlorophyll is synthetically formed in the body of its animal possessor.

The second and third portions of this important paper deal with the vertebrate bile pigments, and some unusual urine pigments; the latter should be of interest to the physician as well as to the physiologist.—*Journ. R. Micr. Society, Dec., 1883.*

PSYCHOLOGY.

DARWIN'S OPINIONS ON INSTINCT.—A posthumous essay on "Instinct," by the late Charles Darwin, was read on December 6th, at the Linnean Society, before a very large and distinguished audience of fellows. The paper, which treated of the instincts of animals, and the bearing of the subject on the theory of natural selection, was originally written for the "Origin of Species," but never published. It discussed the migration of birds and mammals, and after narrating a great series of curious facts, concluded with the inference that though there were many aspects of the question which admitted of no immediate explanation, the migratory instinct was inherited from ancestors who had to compass (for the sake of food or other causes) long distances, when the conditions of land and water were different from what they are at present. He then considered how the more remarkable migrations could possibly have originated. Take the case of a bird being driven each year, by cold or want of food, slowly to travel northward, as is the case with some birds; and in time we may well believe that this compulsory traveling would become instinctive, as with the sheep in Spain. Now, during the long course of ages, let valleys become converted into estuaries, and then into wider and wider arms of the sea; and still he could well believe that the impulse which leads the pinioned goose to scramble northward would lead our bird over the trackless waters; and that, by the aid of the unknown power by which many animals, and savage men, can retain a true course, it would safely cross the sea now covering the submerged path of its ancient land journey. Animals on oceanic islands, and other localities where they have never met with man or beasts of prey, are devoid of fear. This instinc-